

**FY 2018, PA 107 of 2017, Section 605**  
**Metro Detroit Drainage Maintenance and Flooding Mitigation**

This report summarizes the progress, metrics, and investment of maintenance activities to support flooding mitigation-related activities as well as related safety, high priority, and deferred routine maintenance in the Metro Region for FY 2018 extending from 10/1/2017 through 9/30/2018.

**FY 2018 Quick Facts**

- There is full utilization of entire \$8.5 million dedicated to Metro Region maintenance activities to support flooding mitigation-related activities.
- There has been \$9.2 million in flooding mitigation activities expenditures posted.
- The total FY 2018 anticipated obligation through 9/30/2018 for Metro Region flooding mitigation-related activities is \$13.3 million.

**Maintenance Expenditures and Accomplishments**

The expenditures by maintenance activity posted thus far are summarized in Table 1. Each of the activities listed below reduce flooding risk. Cleaning and clearing drainage system components, such as catch basin cleaning, ditching, and culvert cleaning, enables storm water to flow as designed. Sweeping is essential to flood mitigation to prevent debris from collecting on storm sewer grates so that storm water can flow to the drainage system and minimizes debris accumulation in basins and pipes. Pump station maintenance includes sump cleaning, troubleshooting, and retrofits to improve the reliability of pump stations.

**Table 1. Expenditures by Maintenance Activity**

Activity	Description	Cost
Catch basin cleaning and maintenance	Cleaning the inside of catch basins, manholes, or inlets to ensure proper drainage.	\$2,973,092
Culvert cleaning	Cleaning of all types of culverts and underdrains to keep in serviceable condition	\$ 2,763
Culvert maintenance	Repair of culverts or tiles 10 ft. or less in diameter	\$ 269,101
Ditching	Roadside ditch clean-out includes the removal and disposal of debris to ensure proper drainage	\$1,183,503
Pump station maintenance	All activities associated with pump station maintenance; preventive or routine.	\$2,832,693
Sweeping	Routine mechanical or hand sweeping with a broom to remove loose material from approaches, curbs, and gutters.	\$1,971,053
	Total	\$9,232,205

In addition to the amounts summarized in Table 1, there is a \$4.1 million balance remaining on awarded contracts to be expended this fiscal year.

The initial FY 2018 planned maintenance activities, accomplishments, and expenditures pertaining to the \$8.5 million were as follows:

- \$4M Taylor TSC: flooding mitigation activities with an emphasis on sweeping, pump station repairs, catch basin repairs, and additional pump station sump cleaning.
- \$3M Oakland TSC: three catch basis projects along I-696, I-75, and other locations throughout the county that are being coordinated with other major projects in the area.
- \$1M Macomb TSC: emphasis is on ditches along I-94 (continuation from FY 2017) and catch basin repairs along surface streets due to the I-696 project.
- \$500,000 Region Operations: flooding mitigation activities and functions including catch basin cleaning and repairs in Detroit, investigating problem locations, cleaning sewer leads, and retrofits at approximately 30 pump stations.

Actual FY 2018 maintenance activities, accomplishments, and expenditures included the following:

- Taylor TSC: perform sweeping, pump station repairs, catch basin repairs, and additional pump station sump cleaning, plus added cleaning storm sewer leads and soil erosion protection.
- Oakland TSC: perform three catch basis projects along I-696, I-75, and other locations throughout the county that are being coordinated with other major projects in the area, plus added a ditching project along I-96, an additional catch basin contract, and culvert repairs.
- Macomb TSC: perform ditching activity and functions along I-94.
- Region Operations: perform catch basin cleaning and repairs in Detroit, investigated problem locations, and cleaned sewer leads.
- Detroit TSC: added catch basin repair contract.

Maintenance accomplishments by county and activity are summarized in Table 2.

**Table 2. Maintenance Accomplishments by County and Activity**

Activity	Macomb	Oakland	Wayne	Total
Catch basins cleaned (each)	2,315	3,210	2,840	8,365
Catch basins repaired (each)	50	1,328	132	1,510
Storm sewer cleaned/repaired (feet)	-	-	49,345	49,345
Ditching (feet)	TBD	48,000	500	TBD
Pump station sumps cleaned (each)	8	15	44	67
Pump station retrofits (each)	-	1	23	24
Sweeping (curb miles x cycles)	430	5,793	8,411	14,634
Culvert repairs (each)	1	78	-	79
Slope washout repairs (each)	TBD	9	9	TBD
Other - Soil Erosion Measures (each)	-	-	7	7

#### Limited-access Trunkline Flooding Events

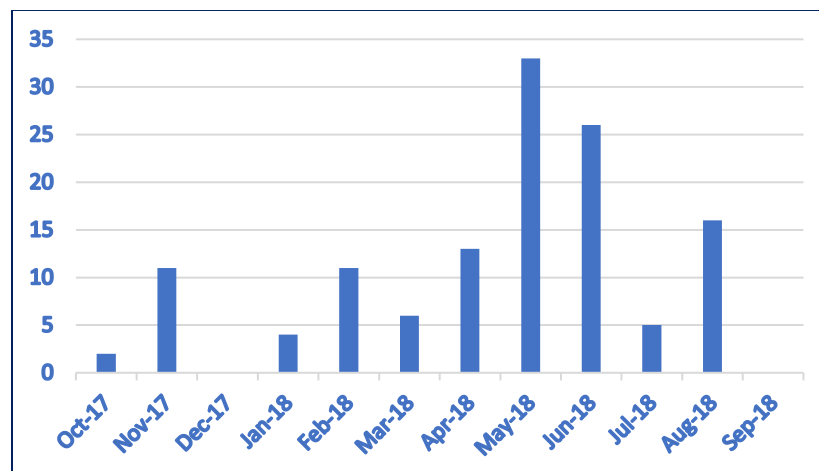
There have been 131 freeway flooding events logged by the Southeast Michigan Transportation Operations Center (SEMTOC) for the freeways in Metro Region during the period 10/1/2017 through 9/1/2018, summarized in Table 3. The extent of flooding ranged from a single travel lane to all travel lanes affected.

Freeway flooding events logged by SEMTOC are summarized below. Table 3 lists the count per year of events by facility for any facility with five or more events. These data serve as a baseline to measure impacts of investment in increased maintenance activities.

**Table 3. Freeway Flooding Events by Facility FY 2018**

Freeway/Ramp	Number of Events
I-75	16
I-94	21
I-96	24
I-275	5
M-10	12
M-39	29
Ramp I-75 North to I-94	12
Others (Less than 5/Facility)	12
Total Events	131

Figure 1 shows the number events per month. During the winter period (December into early April), weather included snow on some of the freeway flooding event days. Watermain breaks were the cause of three of the freeway flooding events during the winter period. September event data is not available yet.



### Figure 1. Freeway Flooding Events by Month

Table 4 lists recurring locations with five or more events during the reporting period.

**Table 4. Recurring Locations of Freeway Flooding Events FY 2018**

Location	Number of Events
Ramp I-75 North to I-94	12
I-94 West Near Cass	7
I-96 East at Livernois	5
I-96 West at Maplewood	5
M-39 South at Grand River	5
I-75 North near Cass	5

#### Summary

Flooding mitigation maintenance activities are also reported on the GIS story map, which is being updated with FY 2018 information. The FY 2017 story map can be viewed [here](#). Figure 2 (next pages) shows some pictures from FY 2018.

The additional investment in flood mitigation maintenance activities provides the ability to deliver increased routine maintenance and perform maintenance repair projects to benefit the road drainage systems. This investment and the associated expanded services reduce the risk of roadway flooding events.



Photo 1. Investigating drainage system failures uses storm sewer camera which displays a blockage in a pipe. The video camera also records the distance from the starting point to the blockage.

Photo 2. Soil erosion control is installed to prevent sedimentation from entering drainage structures and pipes.





Photo 3. Pump impeller is worn which results in this pump not pulling water out of the pump station. Pump is being re-built, an example of a pump station retrofit activity.

Photo 4. Water over the roadway along I-75 at I-696 in October, 2017.



Figure 2. Photos from 2018